JH Stone Nursery Herbicide Use

Wildlife Species Accounts
& Effects Determinations

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for:
J. Herbert Stone Nursery,
Jackson County, Central Point, OR

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Effects Determination Summary

Species	Scientific Name	Status	Present in Project Area	Effect Determination
Birds				
Marbled Murrelet	*Brachyramphus marmoratus*	Threatened	No	No effect
Northern Spotted Owl	*Strix occidentalis caurina*	Threatened	No	No effect
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive	No	No impact
Harlequin Duck	*Histrionicus histrionicus*	Sensitive	No	No impact
American white pelican	*Pelecanus erythrorhynchos*	Sensitive	No	No impact
Lewis' Woodpecker	*Melanerpes lewis*	Sensitive	Nearby	No impact
White-headed Woodpecker	*Picoides albolarvatus*	Sensitive	No	No impact
Purple martin	*Progne subis*	Sensitive	Nearby	MII-NL*
Northern waterthrush	*Seiurus noveboracensis*	Sensitive	No	No impact
Tricolored blackbird	*Agelaius tricolor*	Sensitive	Nearby	MII-NL
Amphibians & Reptile				
Black salamander	*Aneides flavipunctatus*	Sensitive	No	No impact
Siskiyou Mountains salamander	*Plethodon stormi*	Sensitive	No	No impact
Foothill yellow-legged frog	*Rana boylii*	Sensitive	No	No impact
Oregon spotted frog	*Rana pretiosa*	Threatened	No	No effect
Oregon spotted frog critical habitat			No	No effect
Pacific pond turtle	*Actinemys marmorata*	Sensitive	No	No impact
Mammals				
Gray wolf	*Canis lupus*	Endangered (Federal and State)	No	No effect

Species	Scientific Name	Status	Present in Project Area	Effect Determination
North American wolverine	*Gulo luscus*	Proposed Threatened	No	Not Likely to Jeopardize the Continued Existence Of The Species
Pacific Fisher	*Pekania (Martes) pennanti*	Proposed Threatened	No	Not Likely to Jeopardize the Continued Existence Of The Species
Pacific Fisher Critical Habiatat		Proposed Critical Habitat	No	Not Likely to Result In Destruction Or Adverse Modification Of Proposed Critical Habitat
Coastal Marten	*Martes Americana*	Proposed	No	Not Likely to Jeopardize the Continued Existence Of The Species
Sierra Nevada red fox	*Vulpes vulpes necator*	Sensitive	No	No impact
Pallid bat	*Antrozous pallidus*	Sensitive	Foraging only	No impact
Townsend's big-eared bat	*Corynorhinus townsendii*	Sensitive	Foraging only	No impact
Fringed myotis	*Myotis thysanodes*	Sensitive	Foraging only	No impact
Terrestrial Snails & Slugs				
Evening fieldslug	*Deroceras hesperium*	Survey & Manage	No	No effect
Oregon shoulderband	*Helminthoglypta hertleini*	Sensitive	No	No impact
Chase sideband	*Monadenia chaceana*	Sensitive	No	No impact
Green sideband	*Monadenia fidelis flava*	Sensitive	No	No impact
Travelling sideband	*Monadenia fidelis celeuthia*	Sensitive	No	No impact
Robust walker	*Pomatiopsis binneyi*	Sensitive	No	No impact

Species	Scientific Name	Status	Present in Project Area	Effect Determination
Pacific walker	*Pomatiopsis californica*	Sensitive	No	No impact
Crater Lake tightcoil	*Pristiloma arcticum crateris*	Sensitive	No	No impact
Dalles Hesperian	*Vespericola depressus*	Sensitive	No	No impact
Siskiyou Hesperian	*Vespericola sierranus*	Sensitive	No	No impact
Insects				
Franklin's bumblebee	*Bombus franklini*	Sensitive	No	No impact
Western bumblebee	*Bombus occidentalis*	Sensitive	No	No impact
Suckley cuckoo bumble bee	*Bombus suckleyi*	Sensitive	No	No impact
Johnsons hairstreak	*Callophrys johnsoni*	Sensitive	No	No impact
Oregon branded skipper	*Hesperia Colorado oregonia*	Sensitive	Habitat	MII-NL
Gray-blue butterfly	*Plebejus podarce klamathensis*	Sensitive	No	No impact
Insular blue butterfly (aka Coastal greenish blue butterfly)	*Plebejus saepiolus littoralis*	Sensitive	No	No impact
Mardon skipper	*Polites mardon*	Sensitive	No	No impact
Coronis fritillary	*Speyeria coronis coronis*	Sensitive	Habitat	MII-NL
Siskiyou short-horned grasshopper	*Chloealtis aspasma*	Sensitive	No	No impact

* May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing or Cause A Loss Of Viability To The Population Or Species

Introduction

This report forms the basis for the conclusions listed in the Biological Evaluation for CE-Level Decisions and will analyze effects to wildlife from pesticide use on the nursery plant production fields, fallow fields, roadsides and fencelines at J. Herbert Stone Nursery (JHS) in Central Point, Oregon. Additionally, control of blue-green algae in the reserveroir at JHS is included. Pesticides used in the greenhouses has JHS will not affect terrestrial wildlife because the applications occur in ensclosed buildings. The JHS is an important regional resource providing bareroot and container grown conifer seedlings to government agencies in the Pacific Northwest Region for reforestation purposes. In addition, the nursery is growing out native grass, shrubs, and forbs for restoration purposes. The nursery covers 311 acres and includes 240 acres of native plant production fields, five greenhouses, seed storage facilities for the region, extensive cold storage facilities, and significant other nursery related infrastructure.

This BE will analyze the Proposed Action to update the list of pesticides approved for use at the nursery and add some design features associated with their use. The Proposed Action would add several pesticides (primarily herbcides) to their management options and discontinue others.

Proposed Action: Update list of pesticides approved for use at the nusery and add some design features associated with their use.

JHS is a Forest Service-owned nursery and is managed as a typical commercial nursery in an agricultural setting. JHS is located in the Rogue Valley, surrounded by other commercial agricultural operations and residences. Pesticides currently in use at JHS include insecticides, fungicides, fumigants, herbicides and an algaecide. The current limited number of herbicides available for use at JHS have made it impossible to run the nursery in a financially sound manner because most planting fields must be weeded by hand. Also, none of the current herbicides allow planting of cover crops to plow into a fallow field, due to extensive invasive plant infestations, resulting in very low organic matter content in the soil at JHS. Adding newer pesticides labelled for use in nursery or agricultural sites will allow the nursery to operate more efficiently, greatly reduce the presence of weeds on the property, allow cover crop/fallow field methods to improve organic matter content of the soil, and reduce risks to the environment and human health.

Due to the agricultural setting and operation of JHS, wildlife resources are not directly tied to the purpose and need for this project.

Relevant Laws, Regulations, and Policy

The following report serves to document the review of the JHS Herbicide Use Project on National Forest in order to meet the requirements of FSM 2672.4 and to provide information and analysis relative to requirements under FSH 1909.15 (NEPA). JHS is an administrative site, so use of pesticides fits into a listed Categorical Exclusion (36 CFR 220.6(d)(3)).

FSM 2672.4 requires biologists to review FS programs or activities for impacts to threatened, endangered, proposed, and sensitive species and to disclose those findings in a Biological Evaluation. This report will serve as the Biological Evaluation. Review of impacts from the proposed project will also provide compliance with the Endangered Species Act (1973).

Regulatory Framework

Land and Resource Management Plan

JHS was established as an "administrative site" via the purchase of private land in 1976. It had been managed as a unique Regional resource for many years. Leadership oversight of JHS was transferred to the Rogue River-Siskiyou National Forest after the completion of the forest's land and resource management plan (LRMP). As such, there are no standards, guidelines, desired conditions, or special designations in the LRMP relative to JHS operations.

Federal Law

The following federal laws are relevant to operations and decisions about JHS activities:

Federal Insecticide Fungicide and Rodenticide Act (FIFRA)

FIFRA provides for federal regulation of pesticide distribution, sale, and use to protect applicators, consumers, and the environment. All pesticides distributed or sold in the United States must be registered (licensed) by US Environmental Protection Agency (EPA). Before EPA may register a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment" (EPA 2019). All pesticides used and proposed for use at JHS are registered by EPA.

Worker Protection Standard

The Agricultural Worker Protection Standard (WPS) is an EPA law aimed at reducing the risk of pesticide poisoning and injury among agricultural workers and pesticide handlers. It applies to farmworkers, and those that work in a forest, nursery, or greenhouse that produces agricultural plants. WPS requires agricultural workers and handlers to be trained and informed, and also requires that certain supplies are available to respond to unintended exposures.

Endangered Species Act (ESA)

The ESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. It requires federal agencies to consult with the US Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) to ensure that agency actions do not jeopardize the continued existence of a species. Federal agencies also have a mandate in the ESA to work toward the recovery of species listed under the ESA. This biological evaluation will form the basis for determining whether or not a Biological Assessment and further consultation with FWS (for terrestrial species) are necessary.

Clean Water Act

The requirements of the National Pollution Discharge Elimination System (NPDES) under the Clean Water Act apply to activities at JHS. JHS has a current NPDES Pesticide General Permit and reports any discharges annually to the Oregon Department of Environmental Quality, which has been delegated authority to administer this portion of the Clean Water Act.

National Forest Management Act

One of the purposes of the JHS is to grow conifer seedlings to support the reforestation requirements of the National Forest Management Act. The proposed project will enable JHS to produce more stock and do so in a cost-effective manner.

Executive Orders

Invasive Species, EO 13112 of February 3, 1999

This Executive Order provides direction for federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. Other federal laws cited in this EO include, Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C. 4701 et seq.), Lacey Act, as amended (18 U.S.C. 42), Federal Plant Pest Act (7 U.S.C. 150aa et seq.), Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.), Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This EO and the laws cited therein are relavant for invasive plant control at the nursery.

Migratory Birds, EO 12962 of January 10, 2001

This Executive Order directs federal agencies to minimize, to the estent practicable, adverse impacts on migratory birds; ensure that environmental nalyses evaluate the effects on migratory birds; and lessen the amount of unintentional take, among other action items.

Environmental Justice, EO 12898 of February 11, 1994

This Executive Order directs federal agencies to address environmental and human health effects on minority and low-income populations.

State and Local Law

Pesticide use in Oregon is regulated by State law and these regulations are administered by the Oregon Department of Agriculture. Pesticides used in Oregon must be registered for use in Oregon. State and federal law require compliance with all label instructions on pesticide products. The use of any "restricted-use pesticides" requires licensed applicators.

Regional Water Quality Control Board Requirements

Federal Permits, Licenses, or Other Entitlements

Several pesticides used and being proposed for use at JHS are "restricted use" pesticides and require State-licensed pesticide applicators. JHS has several licensed applicators on staff that manage and conduct the pesticide applications.

Topics and Issues Addressed in This Analysis

Purpose and Need

The purpose of the project is to modify the pesticides available for use at the nursery to maintain an environment suitable for growing a wide variety of affordable restoration plant products for nursery clients. "Pesticides" include herbicides to treat weeds and invasive plants within and adjacent to nursery beds; insecticides to respond to harmful pest outbreaks; fungicides to treat fungal diseases; a fumigant to sterilize soils; and a disinfectant to kill algae in the water recycling pond.

Pesticides are required to reliably produce high quality container, bareroot, and seed crops at a cost that is affordable to clients. The plant products grown at the nursery are important for affordable restoration of wildlands throughout the northwest.

Pesticide use has been ongoing for decades at the nursery. The time is ripe for analyzing new pesticide use because 1) the needs for pesticide use at the nursery are subject to ongoing change; 2) updated

information is available regarding pesticide risk assessment; and 3) lower risk, more cost-effective products are available.

The Proposed Action was developed to meet the following objectives:

- Provide more choices to avoid reliance on a single product or type of product and reduce potential for pesticide resistance
- Address known and potential pests including problem weeds, insects, fungi, soil organisms and algae.
- Provide for worker safety
- Minimize risk to aquatic habitats and organisms
- Minimize use of more mobile and persistent synthetic chemicals

The herbicides that are currently in use at the nursery are not always effective on plants that compete with the nursery crops. Herbicide resistance is a concern because a minimal variety of herbicides are currently approved for use. Few pre-emergent herbicides are currently approved. This decreases the effectiveness of weed control in existing and new crop species and increases the risk of herbicide resistance developing in local weed species. If additional herbicides were available, the nursery could economically diversify the selection of crops produced, improve soil health through the use of cover crops, and reduce the number of acres fumigated annually.

Some of the fungicides and insectides previously analyzed for use in the fields need to be utilized in the greenhouses that were built more recently. Newer products have been registered that control specific pests at the nursery, and the fairly recent increase in organic / biological pesticides increases pest control options while reducing risks.

Thus, the need for additional pesticides to increase crop culturing options within the nursery. The purpose is to ensure that pesticide use is done in a manner that protects human health and does not have significant effects on the environment.

Issues

Public and internal scoping were conducted. The public raised no wildlife issues with the proposed action. There is a need to address potential non-target affects to terrestrial wildlife from herbicide use at JHS. Jackson Creek runs along one boundary of the property and it supports a riparian area that may provide habitat to a variety of wildlife species.

Other Resource Concerns

Potential effects to fish will be addressed in a Fisheries Biological Evaluation and Biological Assessment. The section of Jackson Creek that runs alongside the nursery has been designated as critical habitat for the Southern Oregon/Northern California Coast Coho Salmon.

Resource Indicators and Measures

Resource indicators for this analysis include presence of Forest Service sensitive or federally listed species in or adjacent to the JHS property, plausible exposures to sensitive or federally listed species, and quantitative estimates of risk as measured by hazard quotients. Not all risks can be quantified due to data gaps, but best available science available for the proposed pesticides will be used to qualitatively evaluate risks in those circumstances.

Table 1. Resource indicators and measures for assessing effects

Resource Element	Resource Indicator	Measure (Quantify if possible)	Used to address: P/N, or key issue?	Source
Birds	Risks of toxic effects; foraging	Exposures that exceed a level of concern (HQ> 2)	Yes	Risk assessments, Project Design Features,
Mammals	Risks of toxic effects; foraging	Exposures that exceed a level of concern (HQ>2)	Yes	Risk assessments, Project Design Features
Pollinators / invertebrates	Risks of toxic effects; nectar sources and host plants	Exposures that exceed a level of concern or inherent toxicity	Yes	Risk assessments, Project Design Features
All of the above	Habitat or animal presence,	Overlap between presence and season of use	Yes	Operational info, species distributions, life histories

Methodology

Effects to wildlife species are first screened using quantitative risk assessments for each pesticide, when available. Each risk assessment reviews relevant toxicology literature, identifies hazards posed by the herbicides, establishes toxicity thresholds, quantifies plausible exposure (when possible) and characterizes risk. The exposures and risks identified in the risk assessments are further evaluated against the setting and operations of JHS and the likelihood of sensitive or federally listed wildlife occurring at or near JHS property. The risk summary for each group (i.e. mammals, birds, insects) of species is found in the project file (e.g. Bird HQ Summary Sheets).

For birds, sensitive species analyzed in this report eat primarily insects during the time of year they could be present near the project area, so risk to birds is evaluated using a scenario of eating contaminated insects. Likewise, the only sensitive mammals potentially present on the project area are bats, so the small mammal consuming contaminated insects scenario is used to quantify risks. No federally listed birds or mammals occur in the project area.

Information Sources

All pesticides used in the United States must be registered for use by the Environmental Protection Agency (EPA). As part of the registration process, EPA conducts human health and environmental risk assessments. In addition, the Forest Service sometimes conducts its own risk assessments to more accurately reflect out intended uses of pesticides. In the case of the nursery, the agricultural nature of the operations at JHS closely match the agricultural scenarios evaluated in many EPA risk assessments. Credible scientific studies published in high quality peer-reviewed journals are also consulted when available.

Incomplete and Unavailable Information

Research has not been conducted on the effects of pesticides to most free-ranging wildlife species, so the relevant data to specifically evaluate effects to different wildlife species is incomplete or unavailable. Species and pesticide combinations number nearly 1,000 for just the terrestrial wildlife that are threatened, endangered, and Forest Service Sensitive species in Region Six. Each rigorous laboratory test conducted to determine the toxicity of a chemical to an animal is extremely expensive. Therefore, it is

not possible to fund all of the expensive and time-consuming laboratory tests needed to provide all of the information required to fully evaluate risks to free-ranging wildlife.

Specific, relevant data that are lacking include:

- For several pesticide/species group combinations, specific toxicity levels (e.g. no observable adverse effect levels, or lowest observable adverse effect levels) have not been determined.
- The toxicity of the pesticides to amphibians, terrestrial invertebrates, birds, and other animals is either unknown or limited, and cannot be fully characterized with the available data on surrogate species.
- Analysis of effects for any project involving pesticide use relies upon extrapolations from laboratory animals to free-ranging wildlife and controlled conditions to the natural environment.
- There are less data available for birds than mammals, and data on terrestrial invertebrates is often limited to tests done on the non-native European honey bee.

Better estimates of risk could be calculated if laboratory data on the toxicity of the herbicides considered in this EIS were available for more groups of animals and more individual species. However, because of the dynamic nature of wildlife and their habitat (behavior, weather, nutrient availability, contaminant presence, etc.), significant uncertainties would remain for predicting short and long-term reactions to herbicide presence in natural settings even if more laboratory data were available. Additional field studies are desirable, but are considerably more costly than laboratory studies, and are difficult to conduct in such a way that conclusive data is produced (Grue, 1994).

Limitations not withstanding, a substantial amount of scientific data on the toxicity of these herbicides to birds and mammals, and some amphibians and invertebrates exist. The data are generated by manufacturers to meet EPA regulations before an herbicide may be registered for use, and by independent researchers that have published findings in peer-reviewed literature. This data is then analyzed according to standard risk assessment methodology to reach a characterization of risk for each herbicide.

Spatial and Temporal Context for Effects Analysis

The JHS facility covers 311 total acres in Central Point, Oregon. The nursery production fields cover 240 of those acres, with administrative buildings, access roads, greenhouses, shade houses, an artificial wetland, and a reservoir located on the non-production acres.

JHS facility operates much the way a typical farm would operate, with a planned rotation crops and their associated planting and harvesting seasons. This cycle is repeated annually. Pesticide applications occur in response to pest outbreaks and are associated primarily with spring, summer and fall seasons. Pesticide applications also repeat on an annual basis depending upon pest population outbreaks. Effects from pesticide use, if present, could occur over a period of several years for any given resource, up to the lifetime of individual animals that might be residents of the JHS property or adjacent land.

Direct/Indirect Effects Boundaries

For the purposes of this analysis, the spatial context for effects includes the nursery property, Jackson Creek along the nursery boundary and a reasonable distance downstream that could contain pesticide runoff. The nursery is bordered by private property, including residences and other agricultural fields that likely create their own effects to wildlife resources. So, effects conclusion for this analysis are limited primarily to the nursery property itself (e.g. animals that reside on or regularly visit the JHS property).

Cumulative Effects Boundaries

The spatial boundaries for analyzing the cumulative effects to terrestrial wildlife resources include surrounding residences and agricultural fields because those properties also use pesticides.

The temporal boundaries for analyzing the cumulative effects occur primarily over the season(s) that specific species may be present on or adjacent to JHS because that is the timeframe over which potential effects from pesticide exposure may occur.

Affected Environment

Existing Condition

JHS is a Forest Service-owned nursery and is managed as a typical commercial nursery in an agricultural setting. It is located at 2606 Old Stage Rd., Central Point, OR. JHS is located in an agricultural portion of the Rogue Valley, surrounded by other commercial agricultural operations and residences (see Figures 1-3). The nursery is located at approximately 1,272 feet above sea level and has a mild climate. Mean annual precipitation is 20 inches. The seasons are clearly defined, temperatures are generally mild overall, and yearly snowfall is two to three inches on the valley floor. This area is in USDA Plant Hardiness Zone 7-9. Winters are chilly and rainy with an average of about 9 inches of rain between November and February. The rest of the year normally sees little rainfall with total annual precipitation measuring about 18 inches.The median winter temperature is 36 degrees. Summers are warm with a median temperature of 94 degrees and an average of 11 days over 100 degrees. Humidity is low.

The nursery covers 311 acres and includes 240 acres of native plant production fields, five greenhouses, shade houses, an artificial wetland, a reservoir that provides irrigation water, seed storage facilities for the region, extensive cold storage facilities, and significant other nursery related infrastructure.

Primary crops grown include conifers, grass for seed, and native plants. There are 11 different fields (lettered A-K) with complex variations on subsurface and surface drainage. There is sub-surface drainage in all fields, except Field J, in the form of 6” perforated pipe, buried with approximately 3-4 feet cover below the surface. The subsurface drainage for most fields is collected in a sump and then pumped into the nursery reservoir. Surface runoff from different areas of the nursery drains into a couple different locations.

A nice video about the nursery can be viewed at:

https://www.marthastewart.com/912959/profiling-j-herbert-stone-nursery-oregon

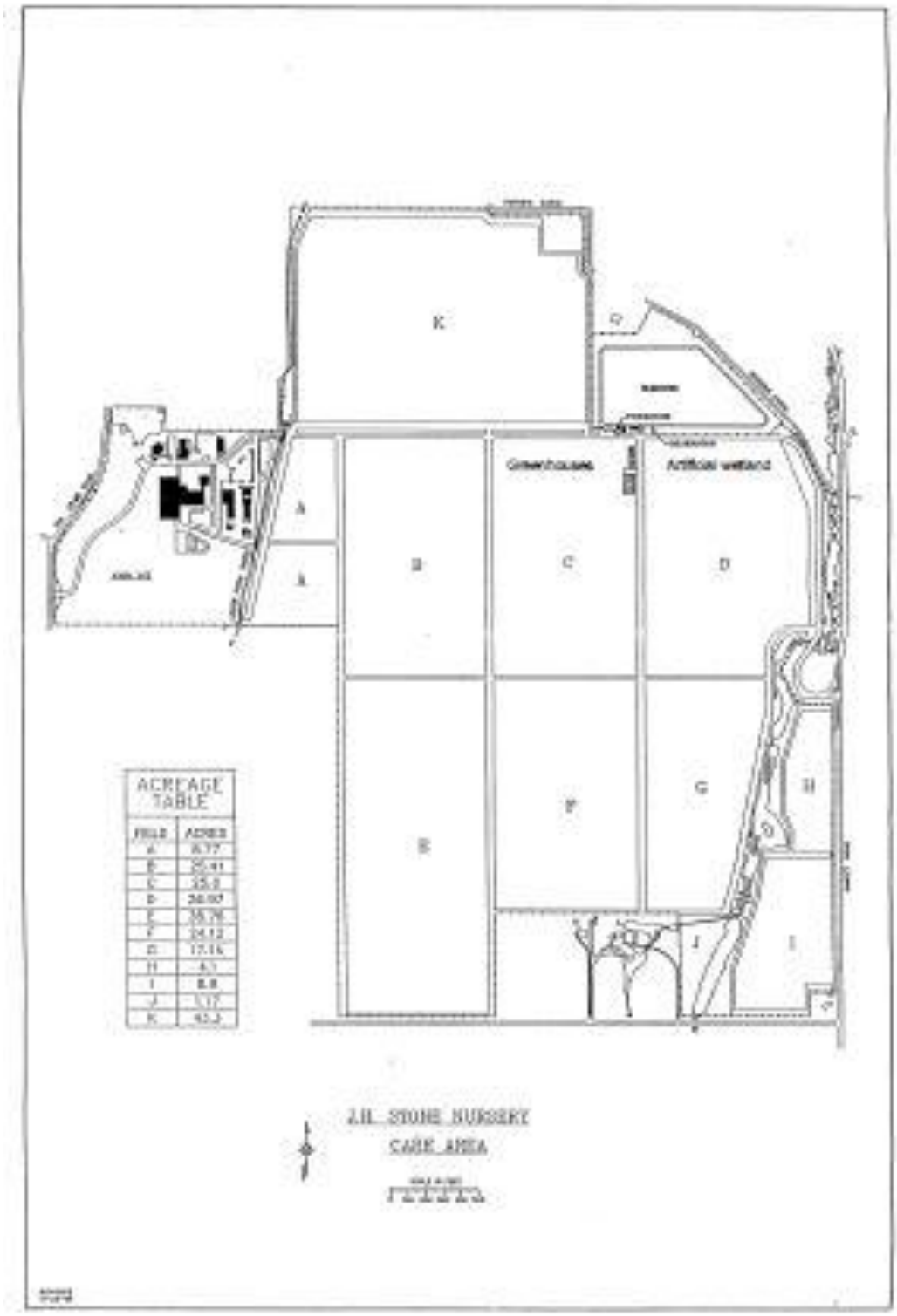


Figure 1. Layout of nursery fields, facilities and Jackson Creek at J. Herbert Stone Nursery.

Figure 2. Aerial photo from Google Maps showing J. Herbert Stone Nursery fields, facilities, Jackson Creek and surroundings. The JHS property boundary is outlined in red.

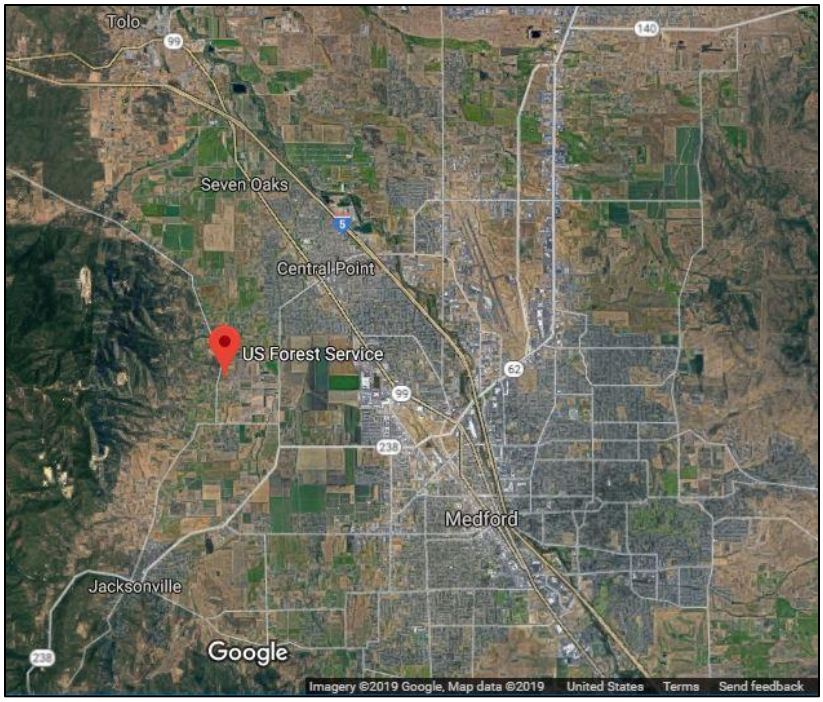


Figure 3. Aerial photo from Google Maps showing the larger area context and setting of the J. Herbert Stone Nursery.

Federally Listed and Forest Service Sensitive Species

The following tables (2 & 3) list those species, other than fish and aquatic mussels, required for consideration within a Biological Evaluation and Wildlife Report for JHS, their status, habitat components, and presence within or near the project area. Those species with suitable habitat within or near the project area are the only species that will be carried forward within this document. Species without suitable habitat or presence within or near the project area are anticipated to have "no effect" from the proposed action. Table 4 lists those species that are carried forward and summarizes the effects determination and the effects rationale.

Table 2. Occurrence of federally listed wildlife species for the JH Stone Nursery.

Species & Status	Basic Habitat Description	Suitable Habitat Present in/near Project Area	Known or Suspected to be Present in/near Project Area	Designated Critical Habitat Present or Affected
FEDERALLY LISTED AMPHIBIANS				
Oregon spotted frog (T) *Rana pretiosa*	Wetlands, marshes, vegetated edges of ponds & lakes in sunny areas	NO	NO	--
Oregon spotted frog CRITICAL HABITAT		--	--	NO
FEDERALLY LISTED BIRDS				
Northern spotted owl (T) *Strix occidentalis caurina*	Old growth mixed conifer forest with Douglas fir & true firs	NO	NO	--
Northern spotted owl CRITICAL HABITAT		--	--	NO
Marbled murrelet (T) *Brachyramphus marmoratus*	nest in old-growth forests, with large trees, multiple canopy layers, and moderate to high canopy closure	NO	NO	--
Marbled murrelet CRITICAL HABITAT		--	--	NO
FEDERALLY LISTED MAMMALS				
Gray wolf € *Canis lupus*	Avoids developed areas, but travels long distances	NO	NO	--
North American wolverine (Proposed T) *Gulo gulo*	High elevation mixed conifer forest	NO	NO	--
Pacific fisher (West Coast DPS) (Proposed T) *Pekania pennantia*	coniferous forests with dense canopies, large trees, and ample downed woody material	NO	NO	--
Pacicif fisher – PROPOSED CRITICAL HABITAT		--	--	NO
Pacific marten (Coastal DPS) *Martes caurina*	Old forests with complex structure and composition	NO	NO	--

Table 3: Occurrence of R6 sensitive wildlife species (2019) for the JH Stone Nursery.			
Species	**Basic Habitat Description**	**Suitable Habitat Present in/near Project Area**	**Known or Suspected to be Present in/near Project Area**
SENSITIVE AMPHIBIANS & REPTILE			
Black salamander *Aneides flavipunctatus*	coniferous forest or deciduous woodland	NO	NO
Siskiyou Mountains salamander *Plethodon stormi*	Older undisturbed forests with a closed canopy, moist microclimate, and rocky substrates	NO	NO
Foothill yellow-legged frog *Rana boylii*	Foothill and mountain streams, preferably with unregulated flow	NO	NO
Pacific pond turtle *Actinemys marmorata*	Rivers, streams, lakes, ponds with deep slow flowing pools	NO	NO
SENSITIVE BIRDS			
Northern bald eagle *Haliaeetus leucocephalus*	Lakeside or riverside with large trees	NO	NO
Purple martin *Progne subis*	cropland, hedgerows, grasslands, shrubland, suburban, orchard, and woodlands	YES	YES
Harlequin duck *Histrionicus histrionicus*	Rapid streams with large trees	NO	NO
Tricolored blackbird *Agelaius tricolor*	Freshwater marshes with cattails, dense willows, Himalayan (Armenian) blackberries	YES, but limited	Generally (Central Point, OR)
Lewis' woodpecker *Melanerpes lewis*	Oregon white oak, ponderosa pine and cottonwood .	YES	YES
White-headed woodpecker *Picoides albolarvatus*	Mature ponderosa pine forest with large diameter snags	NO	NO
Northern waterthrush *Parkesia noveboracensis*	Dense riparian willows, often along shores of lakes or ponds	NO	NO
American white pelican *Pelecanus erythrorhynchos*	Islands in freshwater lakes, forage in marshes, lakes, large rivers	NO	NO
SENSITIVE MAMMALS			
Fringed myotis *Myotis thysanodes*	Breeds in caves, mines, buidlings; Forested or riparian areas	YES	Generallly
Townsend's big-eared bat	Caves, mines, bridges,	Foraging	Closest known site is 3

Table 3: Occurrence of R6 sensitive wildlife species (2019) for the JH Stone Nursery.			
Species	**Basic Habitat Description**	**Suitable Habitat Present in/near Project Area**	**Known or Suspected to be Present in/near Project Area**
Corynorhinus townsendii	rock crevices and old buildings; forages in flight and from foliage		miles from nursery
Pallid bat *Antrozous pallidus*	Arid areas, dry open forests, with rock crevices, caves, old mines, trees or old buildings; forages on ground	YES	Generally
Sierra Nevada red fox *Vulpes vulpes necator*	Open conifer woodlands and mountain meadow near at high elevations	NO	NO
SENSITIVE TERRESTRIAL INVERTEBRATES			
Crater Lake tightcoil *Pristiloma crateris*	Perennially wet areas in mature conifer forests	NO	NO
Oregon shoulderband *Helminthoglypta hertleini*	Rocks and woody debris in rocky areas of forests	NO	NO
Chase sideband *Monadenia chaceana*	Under woody debrise in moist coniferous forest, in lower reaches of major drainages, in talus and rock piles	NO	NO
Green sideband *Monadenia fidelis flava*	deciduous trees and brush in wet, undisturbed forest at low elevations; low coastal scrub	NO	NO
Travelling sideband *Monadenia fidelis celeuthia*	rock outcrops with oak and maple overstory; moist mixed conifer-hardwood forests	NO	NO
Scalloped juga *Juga acutifilosa*	Aquatic; cold well-oxygenated water	NO	NO
Robust walker *Pomatiopsis binneyi*	Aquatic; Perennial seeps or rivulets protected from flooding	NO	NO
Pacific walker *Pomatiopsis californica*	Aquatic; occurs only along narrow coastal fog belt	NO	NO
Siskiyou Hesperian *Vespericola sierranus*	perennially moist springs, seeps, streambanks	NO	NO
Dalles Hesperian *Vespericola depressus*	Wet sites in lowland forests	NO	NO
Coronis fritillary *Speyeria coronis coronis*	lower elevation canyons and grasslands, mid-montane meadows, forest margins and openings	YES	NO
Oregon branded skipper *Hesperia colorado oregonia*	420-1500 meter, hillslopes with flowers, rabbitbrush	(Documented Medford BLM)	NO

Table 3: Occurrence of R6 sensitive wildlife species (2019) for the JH Stone Nursery.

Species	Basic Habitat Description	Suitable Habitat Present in/near Project Area	Known or Suspected to be Present in/near Project Area
Mardon skipper *Polites mardon*	Grasslands between 500-1700 meters in Cascades	NO	NO
Gray-blue butterfly *Plebejus podarce klamathensis*	High elevation wet montane meadows	NO	NO
Insular blue butterfly *Plebejus saepiolus littoralis*	Cool mountain meadows with seeps and host clover	NO	NO
Johnson's hairstreak *Callophrys johnsoni*	Coniferous forest, especially old growth with mistletoe	NO	NO
Western bumblebee *Bombus occidentalis*	Areas with abundant floral resources, rodent burrows, bunch grass or other nesting structure	Historic	NO
Franklin's bumblebee *Bombus franklini*	plentiful pollen and nectar resources, abandoned rodent burrows, undisturbed grassland, and proximity to water sources	Historic	NO
Suckley cuckoo bumble bee *Bombus suckleyi*	Generalist forager, obligate nest parasite of *B. occidentalis*	Historic?	NO
Siskiyou short-horned grasshopper *Chloealtis aspasma*	Grassy openings with forbs, shrubs and often surrounded by forest, above 3,800 ft.	NO	NO

Due to the site and operations of JHS, no federal listed species and very few species on the Regional Forester's Sensitive Species list have the potential to occur on or near the nursery. The agricultural fields on the nursery do not provide native habitat. The following species are the only ones with potential habitat on or adjacent to the JHS and will be discussed further in this Biological Evaluation.

Table 4. Species on the Regional Forester's Sensitive Species List that may occur on or near the J. Herbert Stone Nursery and analyzed in this report.

Species	Basic Habitat Description	*Consistent with Conservation Strategy (Y/N/NA)	Habitat Increased, Decreased, or Unchanged (+/-/=)	Effect Determination Summary
Tricolored blackbird *Agelaius tricolor*	Freshwater marshes with cattails, dense willows, Himalayan (Armenian) blackberries	Y	=	MII-NL*

Table 4. Species on the Regional Forester's Sensitive Species List that may occur on or near the J. Herbert Stone Nursery and analyzed in this report.

Species	Basic Habitat Description	*Consistent with Conservation Strategy (Y/N/NA)	Habitat Increased, Decreased, or Unchanged (+/-/=)	Effect Determination Summary
Lewis' Woodpecker *Melanerpes lewis*	Oregon white oak, ponderosa pine and cottonwood .		=	No impact
Purple martin *Progne subis*	cropland, hedgerows, grasslands, shrubland, suburban, orchard, and woodlands	Y (no neonic insecticides used)	=	MII-NL
Pallid bat *Antrozous pallidus*	Arid areas, open forests, with rock crevices, caves, old mines, trees or old buildings; forages on ground	Y	=	No impact
Fringed myotis *Myotis thysanodes*	Breeds in caves, mines, buidlings; forested or riparian areas; forages on shrubs and the ground	Y	=	No impact
Townsend's big-eared bat *Corynorhinus townsendii*	Caves, mines, bridges, rock crevices and old buildings; forages in flight and from foliage	Y	=	No impact
Coronis fritillary *Speyeria coronis coronis*	lower elevation canyons and grasslands, mid-montane meadows, forest margins and openings	NA	=	MII-NL
Oregon branded skipper *Hesperia Colorado oregonia*	420-1500 meter, hillslopes with flowers, rabbitbrush	NA	=	MII-NL

* May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing or Cause A Loss Of Viability To The Population Or Species

Management Indicator Species

Management Indicator Species (MIS) apply to management of the National Forest System lands, not administrative sites outside the forest boundaries. Species designated as MIS will not be discussed in this document.

Existing Condition and Environmental Consequences

Table 1. Resource indicators and measures for the existing condition			
Resource Element	**Resource Indicator (Quantify if possible)**	**Measure (Quantify if possible)**	**Existing Condition**
Herbicide exposure	Toxicity to wildlife	Hazard Quotients for different herbicides for birds, mammals, amphibians, fish and invertebrates	HQ's from currently used herbicides

Lewis' Woodpecker

Lewis' woodpeckers are migratory in southwestern Oregon, with sporadically large populations in the winter and scattered breeding pairs in the summer reported. They were formally common breeders in summer in Jackson and Josephine Counties but they have not been documented there in the many years (Galen 2003). They do winter in southwest Oregon, and specifically are reported wintering near the project area along Bear Creek near Medford.

This species is closely tied to the ponderosa pine/oak savannah habitats of eastern and southwest Oregon. Nests are often in the large Ponderosa Pine snags or mature white oak, with a lower frequency of nests (6%) found in cottonwood (Galen 2003). In winter they store acorn meat in crevices in trees and power poles. Because this woodpecker does not usually excavate its own cavity, they have a close tie to older snags within the forest that are likely to contain cavities and have crevices for food storage.

The population of Lewis' woodpeckers has fallen dramatically across Oregon as pine – oak woodlands are lost. A contributing factor in the decline has been the spread of the European Starling, which aggressively out-competes this species for available cavities. Habitat loss is due to a wide variety of concerns that include urbanization of valley floors, fire suppression and encroachment of conifer forests, and timber harvest of pine components in the oak forests.

Lewis' woodpecker are opportunistic feeders. In spring and summer they make use of locally abundant insects, caught by gleaning or flycatching. In fall and winter, they eat ripe fruits and acorns. They store acorn mast in cracks in snags and power poles and theys mast tree sites are an essential component of winter habitat.

Determination: No suitable habitat will be removed or modified. When they are present and feeding in the project area, they rely on acorn and ripe fruits, which will not be treated or contaminated by pesticide use at the nursery. Therefore, the proposed project will have no impact on Lewis' woodpecker.

Purple Martin (Western subspecies)

Purple martins are the largest member of the swallow family in North America. They are neotropical migrants, spending the non-breeding season in Brazil and migrating to North America to nest. An early spring migrant, they arrive in Oregon in March and April.

Although purple martins can be found throughout nearly the entire United States east of the Rocky Mountains, populations in the west are far more restricted and have declined dramatically in recent decades. In Oregon, they principally inhabit the Coast Range and Willamette Valley (ODFW 2019). They are also locally common at Fern Ridge Reservoir, in Lane County and at some coastal estuaries and

numerous colonies along the Columbia River from Hood River to Astoria. Once absent from their former range in Klamath and Jackson Counties (Horvath 1999), they have recently been reported from the Rogue River Valley in Jackson County, including the Rogue River Preserve (Janes 2017, Freeman 2019).

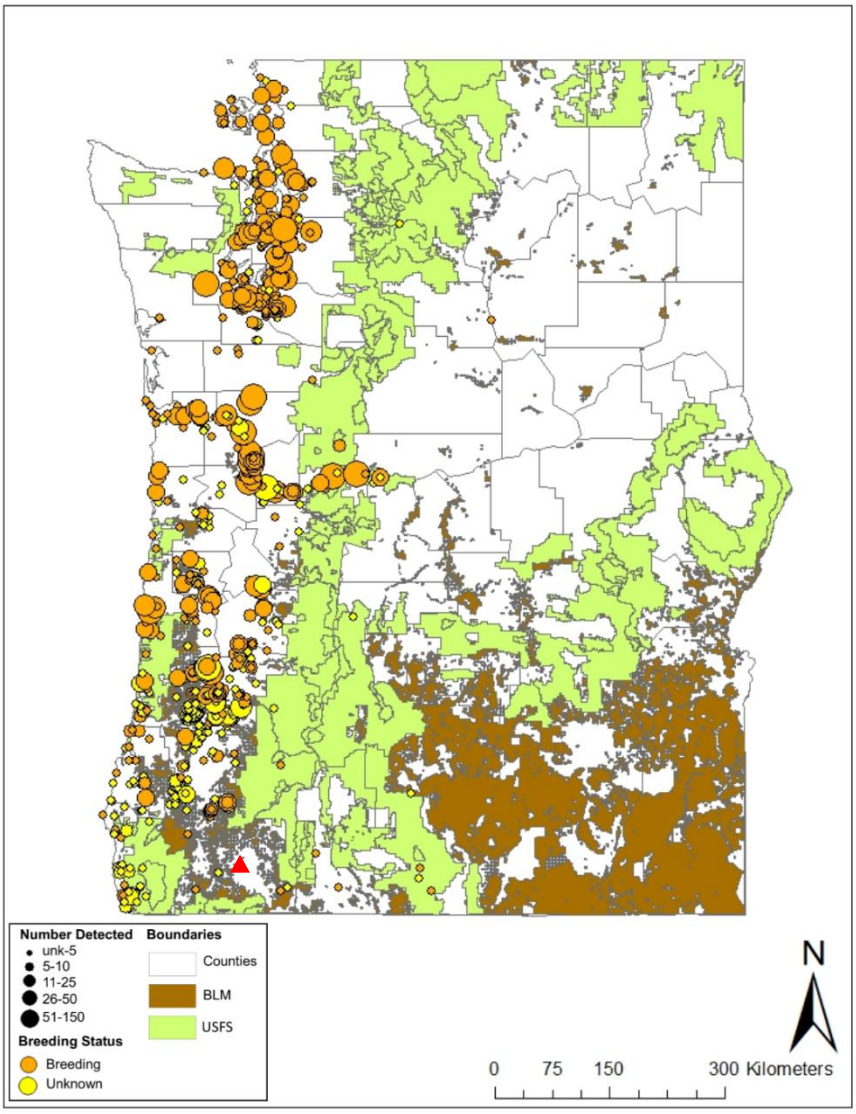


Figure XX. *Documented Purple Martin observations from 1901-2017, compiled from various state and federal data sources (U.S. Forest Service's NRIS, BLM's GeoBOB, Oregon's ORBIC, and Washington's WDFW datasets). From Rockwell 2019. J. Herbert Stone Nursery location depicted by red triangle.*

Purple Martins in Oregon nest opportunistically in cavities in open habitats, often those created by disturbances like forest fire or clear cutting, which return habitats to early stages of succession (Horvath 1999). The recent sightings at the Rogue River Preserve found them using cavities in telephone poles (Freeman 2019).

Purple martin is an aerial feeder that utilizes a wide variety of terrestrial habitats including cropland, hedgerow, desert, grasslands, savanna, shrubland, chaparral, suburban, orchard, conifer woodland and hardwood woodlands. Generally, they inhabit open areas and prefer an open water source nearby (Horvath 2003). They often drink and bathe while skimming over open water. Having water nearby also helps support plentiful insects for food (PMCA 2006). Open water sources and natural water flows are

important components of martin habitat because they provide habitat for the flying insects upon which purple martin depend.

Purple Martins have declined in many areas for two main reasons; (1) the reduction of natural cavities (e.g., hollow trees, snags) from human activities (e.g., logging), and (2) competition for nest sites from invasive species such as the English sparrow and European starling (PMCA 2001, Wiggins 2005).

Determination: No suitable habitat will be removed or modified. Populations of purple martin Oregon and Washington are located north and west of the project area. Due to a recent sighting at the Rogue River Preserve, we assume that a few individuals may visit the general project area and could be affected if they ate a sufficient quantity of insects that were also contaminated by a sufficient quantity of oyrzalin. But the spatial scale, scope, and magnitude of the potential effects, relative to the distribution and population of purple martin, are extremely limited. Therefore, the proposed project may impact individuals but will not lead to a trend toward federal listing.

Tricolored Blackbird

This colonial blackbird is mostly endemic to California, with Oregon birds representing only 1% of the total population (Spencer 2003). Tricolored blackbirds generally prefer to breed in freshwater marshes with emergent vegetation (cattails) or in thickets of willow or other shrubs. In Oregon, it has bred in tangles of Himalayan (Armenian) blackberry growing in and around wetlands (Csuti, et al. 2001). In Oregon, they are found only during breeding season and primarily in Klamath and Jackson Counties (Beedy et al. 2018), including Central Point, OR which is near the project area (Spencer 2003). Nesting colonies are sensitive to human disturbance and traffic and will relocate or abandon colonies if disturbed (Spencer 2003). Conservation priorities for tricolored blackbird involve primarily protecting existing nesting sites, establishing new suitable nesting areas, incorporating suitable conservation measures in public land management, and educating private landowners (Tricolored Blackbird Working Group 2007).

Most of Oregon's tricolored blackbirds winter in California (Csuti, et al. 2001, Spencer 2003).

Tricolored blackbirds eat mostly insects, snails, and tadpoles during the breeding season, and feed on a variety of seeds and waste grain following breeding (Spencer 2003). They are reported to forage in irrigated pastures and various agricultural croplands.

Determination: No suitable habitat will be removed or modified. The known tricolored blackbird site in Central Point, OR is not on or adjacent to the JHSN property. Tricolored blackbirds could forage in the fields at JHSN although this has not been reported. Thiram has low acute toxicity to birds, but could pose a risk to birds eating treated seeds from chronic exposures (EPA 2004). However, tricolored blackbirds are not typically present in Oregon in winter (Beedy et al. 2018), so the plausibility of chronic exposures is limited. Oryzalin may also pose a risk to tricolored blackbirds if they ate a sufficient quantity of insects that were also contaminated by a sufficient quantity of oyrzalin. Given that only 1% of tricolored blackbirds occur in Oregon, the spatial scale, scope, and magnitude of the potential effects, relative to the distribution and population of this species, are extremely limited. Therefore, the proposed project may impact individuals but will not lead to a trend toward federal listing.

Fringed Myotis

Fringed myotis is found throughout western North America in a wide range of habitats from desert, grassland and shrub-steppe, to pinyon-juniper and pine-oak woodlands and ponderosa, spruce-fir, and Douglas-fir forests (Gervais 2017). In the Pacific Northwest, they are considered primarily a forest-dwelling species. In Oregon it occurs along the coast range, Willamette Valley, southern Cascades, and Blue Mountains. Found in a variety of habitats, the fringe-tailed bat seems to prefer forested or riparian

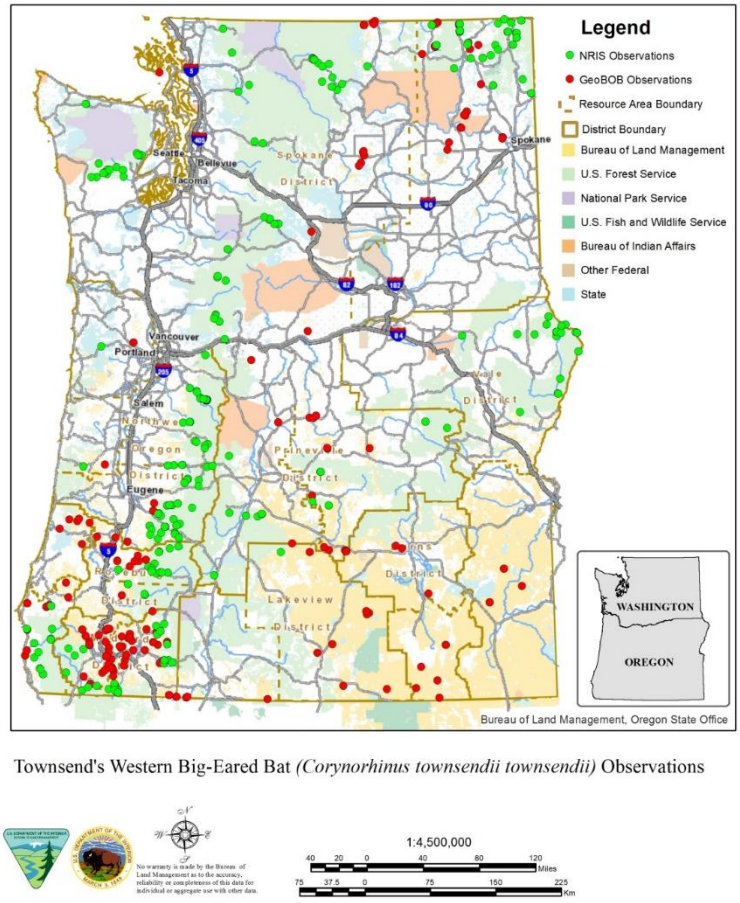
areas (Csuti, et al. 2001). In SW Oregon, they are considered a snag obligate rooster (Cross, et al. 1997). It appears to be adapted to living in areas with diverse vegetative substrate. They eat beetles, moths, crickets, and other insects captured in flight or by gleaning from a surface. Loss of habitat through conversion and degradation is a major threat to this species. Second to loss of forested habitat is the loss of stand structural complexity, which supports both foraging and roosting activities (Gervais 2017).

Cross et al. (1997) reported capturing two *M. thysanodes* (1 male, 1 female) within the Ashland Watershed during August.

Determination: No suitable habitat will be removed or modified. Pesticide use is not proposed for the adjacent riparian area, and operations manage water drainage to largely avoid contaminating the creek. If these bats foraged on JHSN, they could be exposed to pesticides. But the spatial scale, scope, and magnitude of the potential effects, relative to the distribution and population of fringes myotis, are extremely limited. Quantitative risk assessments indicate only chlorpyrifos would be over a level of concern, and its use is restricted to the greenhouse. Therefore, the project will have no impact on fringed Myotis.

Townsend's Big-eared Bat

Townsend's big-eared bat ranges from British Columbia south to Mexico and eastwards into Nebraska, Oklahoma, and west Texas (Gervais 2017). In Oregon, they are considered to range throughout the State but may be absent from the western Basin and Range Province (Gervais 2017). They occur in a wide variety of habitats, its distribution tends to be geomorphically determined and is strongly correlated with the availability of caves or cave-like roosting habitat (e.g., old mines) (Pierson et al. 1999). The species may also use hollow trees for roosting. Suitable roosts sites and hibernacula fall within a specific range of temperature and moisture conditions. Moths make up the majority of the diet for *C. townsendii*. Human disturbance or destruction of maternity roosts and hibernacula that causes roost abandonment or death is considered a primary threat (Gervais 2017). They have been observed in the general vicinity of JHSN (see map).



Townsend's Western Big-Eared Bat *(Corynorhinus townsendii townsendii)* Observations

Observations of Townsend's big-eared bat (*Corynorhinus townsendii*) recorded in Forest Service (NRIS) and BLM (GeoBOB) databases in Oregon and Washington. Data pulled February 3, 2017. From Gervais 2017.

Determination: No suitable habitat will be removed or modified. Townsend's big-eared bats occur in SW Oregon. If these bats foraged on JHSN, they could be exposed to pesticides. But the spatial scale, scope, and magnitude of the potential effects, relative to the distribution and population of fringes myotis, are extremely limited. The use of Btk is a particular risk this species because it is specific to Lepidoptera and Townsend's big-eared bats rely heavily on moth prey. However, Btk is not proposed to be used at JHSN. All proposed pesticides have been evaluated for risk to small mammals eating insects. Quantitative risk assessments indicate only chlorpyrifos would be over a level of concern, and its use is restricted to the greenhouse. Therefore, the project will have no impact on Townsend's big-eared bats.

Pallid Bat

Widely distributed throughout western North America, pallid bats are known to occur throughout SW Oregon and NW California. They are most common east of the Cascades in Oregon and Washington. Most commonly roosts in rock crevices, but suitable roost habitat types include buildings, bridges, rock outcrops, and large decadent snags (Gervais 2016). Pallid bats use various arid habitat types including

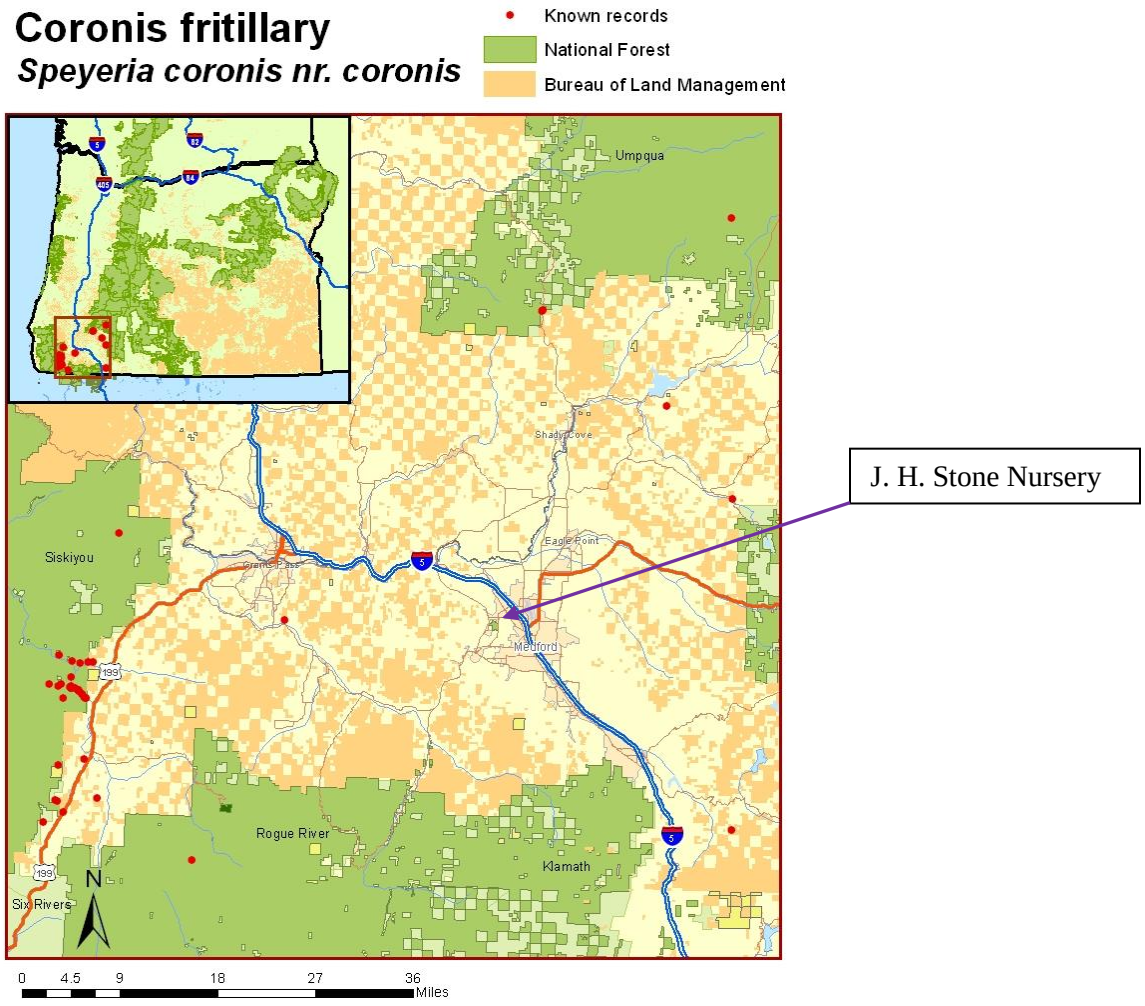
open forests, sagebrush, juniper and salt-desert scrub, as well as open, large-diameter ponderosa pine stands (Csuti et al. 2001; Cross, et al. 1997, Gervais 2016). In southwestern Oregon, they have been captured in mixed conifer forests of Douglas-fir (*Pseudotsuga menziesii*) and western red-cedar (*Thuja plicata*) in lowland valleys (Cross and Waldien 1995, D. Clayton, personal observation). Sources of water are usually present in their habitat. Pallid bats forage on the ground, which is unusual for a bat, and feed on Jerusalem crickets, beetles, grasshoppers, and scorpions, and have even been known to eat lizards and pocket mice. Pallid bats will readily abandon a roost site if disturbed.

Pallid bats have been captured from several sites on the nearby RRSNF, including some locations in the Applegate area. They have also been captured at a site just south of Pilot Rock at 4,500 feet in elevation, (Dave Clayton pers. obs.).

Determination: Habitat on and adjacent to JHSN is poor and no suitable habitat will be removed or modified. Pallid bats can be considered to occur in the general area, but likely rarely occur in the valley floor, based on habitat suitability models (see Gervais 2016). If pallid bats foraged on JHSN, they could be exposed to pesticides. All pesticides have been evaluated for risk to small mammals eating insects. Quantitative risk assessments indicate only chlorpyrifos would be over a level of concern, and its use is restricted to the greenhouse. Therefore, the project will have no impact on pallid bats.

Coronis Fritillary

A relatively large (~ 3in.) butterfly that occurs in lower Rogue & Illinois River valleys of Jackson and Josephine counties. It is expected in Coos, Curry and Douglas counties. Locally distributed in the Siskiyous. Surveys were conducted in 2011 in Josephine County (Reilly and Black 2011). Their population is centered around the 8-Dollar Mountain area of Josephine County and they are closely tied to that habitat (Reilly, pers. comm. 2019). There are no known locations in the immediate vicinity of JHSN.



Records of *Speyeria coronis* nr. *coronis* in Oregon, relative to Forest Service and BLM lands, as of 2011.

The Coronis fritillary inhabits lower elevation canyons and grasslands as well as mid-montane meadows and forest margins and openings (Pyle 2002). Caterpillars spend winter in first instar before feeding (Pyle 2002). In spring larvae feed mostly on *Viola hallii*, found in rocky serpentine habitats (Hammond pers. comm., as cited in Jordan 2011). Adults seem to move uphill shortly after emerging, and are found at higher elevations in the summer, probably in search of nectar and (Warren 2005). For this subspecies (*Speyeria coronis* nr. *coronis*) adult's are strongly attracted to flowers of mint and thistle along the borders of mountain streams and azaleas at higher elevations in the summer (Hammond, pers. com. 2011, as cited in Jordan 2011). They will also nectar on bull thistle, other composites, and chokecherry (Pyle 2002). Females, at least, apparently return to basin habitats later in the season to deposit eggs. The single annual brood flies from mid-May to mid-September.

In the Illinois and Rogue valleys, the low elevation grasslands habitats of this subspecies are threatened by urbanization, development, and agriculture (Hammond 2006, pers. comm., as cited in Jordan 2011).

Determination: There are no larval habitats or food plants at JHSN and only a random adult flying to other areas might visit the JHSN property (Reilly, pers. comm. 2019). Therefore, the proposed project may impact individuals, but would not lead to a trend toward federal listing.

Oregon Branded Skipper

The Oregon branded skipper (*Hesperia colorado oregonia*) is a member of the subfamily Hesperiinae, "monocot" or "folded wing skippers." This skipper is undergoing taxonomic and molecular analyses to determine distinctions between closely related subspecies. The currently-understood distribution of this subspecies stretches from northern California (Trinity County) to southwestern Oregon (Blevins 2016). In Oregon, populations composed mostly of phenotypically consistent adults of *H. c. oregonia* occur only in southern Jackson County (Warren 2005).

The species has a single brood each year, and individual eggs are laid on or near the base of host plants. This subspecies does not migrate, and skippers are generally considered strong, fast fliers and are typical nectarers and puddlers (Pyle 2002; COSEWIC 2013).

This subspecies has been observed flying as early as May 31 in Josephine County, Oregon and as late as September 20 in Jackson County, Oregon. Most records for the subspecies in southwestern Oregon date between July and August. Known records for this species in Oregon are from 1382 to 4921 ft. (420 to 1500 m), with the exception of two records from Mt. Ashland, including one with elevation provided (7500 ft.; 2286 m) (Hinchliff 1994 and Evergreen Aurelians 1996, as cited in Jordan 2012). A record from the west slope Pilot Rock (summit: 5909 ft.) did not include actual elevation. This species has recently been documented in the Medford District of BLM.

In Oregon, males of *H. colorado* are frequently found on hilltops, flying along roads, and at mud (Warren 2005; Opler et al. 2012). Pyle (2002) lists chokecherry, gayfeather, goldenweed, and yellow yarrow as the nectaring plants for this species (as a whole). Warren (2005) notes that both male and female H. colorado visit a wide variety of flowers, and are especially fond of *Chrysothamnus* (e.g., rabbitbrush). Knowledge of *H. c. oregonia* larval foodplants is lacking (Warren 2005). Other members of the species feed on various grasses and sedges, including *Festuca* (fescue), *Bromus* (brome), *Poa* (bluegrass), *Stipa* (needlegrass), *Andropogon* (beardgrass), *Bouteloua* (grama), and *Carex* (sedge) species (Opler et al. 2012; reviewed in Warren 2005). *Festuca* has been reported as the larval foodplant of *H. colorado mattoonorum* in Del Norte County, California, and *Achnatherum thurberianum* is known as a foodplant of what is now called *H. colorado idaho* in Mono County, California (reviewed in Warren 2005). COSEWIC (2013 citing Miskelly 2013) report red fescue and Roemer's fescue, both of which occur in the Rogue vicinity (Oregon Flora Project 2019), as likely larval foodplants in B.C.

Both pictures: *Hesperia colorado oregonia* habitat, Baldy Creek Road, Jackson County, Oregon, 25 August 2010. Photograph by Kim and Mike Stangeland, used with permission. Available at: http://butterfliesofamerica.com/hesperia_colorado_oregonia_habitats.htm

Determination: Potential food plants are grown at JH Stone Nursery to increase seed of native forbs and grasses available for use in restoration throughout the region. However, the description of the sites at which this species is most often found (mid-elevation hillslopes) is not present on the nursery grounds. The highly disturbed row crop growth of grasses is not suitable for butterfly larvae. JHSN could grow yarrow, a potential nectar source for adults, but this skipper is not reported from the valley floor agricultural lands. The use of *Bacillus thuringiensis var. kurstaki* (Btk) in southern Jackson County for the purpose of gypsy moth control is identified as a potential threat to this butterfly. Btk is not used or proposed for use at JHSN. Therefore, the proposed project may impact individuals, but would not lead to a trend toward federal listing.

Western Bumble Bee

While the western bumble bee (*B. occidentalis*) was historically known throughout Oregon and Washington, it is now largely confined to high elevation sites and areas east of the Cascade Crest (Cameron et al. 2011, Williams et al. 2014, Xerces Society 2012). Surveys conducted by the Ashland Resource Area of the Medford BLM found only one *B. occidentalis* site (2 individual bees), on Mt. Ashland, Siskiyou Mountains Ranger District, Rogue River-Siskiyou National Forest (Snider and Godwin 2016). The Mt. Ashland survey site is high elevation meadow bordered by conifers and the general location is where the last known *Bombus franklini* was documented by Dr. Robbin Thorp.

Like other bumble bees, *Bombus occidentalis* has three basic habitat requirements: suitable nesting sites for the colonies, nectar and pollen from floral resources available throughout the duration of the colony

period (spring, summer and fall), and suitable overwintering sites for the queens. Reports of *B. occidentalis* nests are primarily in underground cavities such as old squirrel or other animal nests and in open west-southwest slopes bordered by trees.

The primary threats to *B. occidentalis* at the sites where it currently exists in Oregon and Washington include: pathogens from commercial bumble bees and other sources, impacts from reduced genetic diversity, and habitat alterations including conifer encroachment (resulting from fire suppression), grazing, and logging. Other threats include pesticide use, fire, agricultural intensification, urban development and climate change.

In a rangewide study of eight bumble bee species, *B. occidentalis* and other declining species were associated with increased levels of the fungal pathogen *Nosema bombi* relative to species that were found to be stable (Cameron et al. 2011).

Insecticides, which are designed to kill insects directly, and herbicides, which can remove floral resources, both pose serious threats to bumble bees. Of particular concern are neonicotinoids, a class of systemic insecticides whose toxins are extraordinarily persistent and are expressed in the nectar and pollen of plants (and therefore are actively collected by bumble bees), and exert both lethal and sublethal effects on bumble bees (Whitehorn et al. 2012, reviewed in Hopwood et al. 2012). Note that neonicotinoids insecticides are not currently in use or proposed for use at JHS.

Determination: The western bumble bee is not currently present in or adjacent to the project area, so the proposed project will have no impact on western bumble bees.

Suckley Cuckoo Bumble Bee

Bombus suckleyi, and other cuckoo bumble bees, are unique in that they are dependent on another *Bombus* spp. to serve as a host. Because they have no corbicula, they have an obligate dependency on social bumble bees (Goulson 2010) to collect pollen on which to rear their young. As such, *B. suckleyi* are a cuckoo species that are nest parasites of other species of bumble bees, and specifically, apparently only produce adults when parasitizing the nests of western bumble bees (*B. occidentalis*)(reviewed in Thorp et al. 1983).

Bombus suckleyi historically occurred throughout much of the western United States, though largely confined to mountainous regions. It is also present east through the Canadian Great Plains. This species is known from northern California, Oregon, Washington, Idaho, Colorado, Montana, North Dakota, South Dakota, British Columbia, Alaska, the Yukon and Northwest Territories, Alberta, Saskatchewan, and Manitoba. There is also a disjunct population in eastern North America with a few records in New York, Ontario, Quebec, Nova Scotia, and Newfoundland and Labrador. (Williams et al. 2014).

A 2016 survey of the BLM Ashland Resource Area found on *B. suckleyi* along Keno Road at 5,000 feet elevation (Snider and Godwin 2016). Surveys of National Forests in southwestern Oregon in 2015 found two *B. suckleyi* in the vicinity of Hemlock Lake (elevation 4,400 ft.) on the Umpqua NF, but none on the Rogue River-Siskiyou NF (Mitchell et al. 2016).

A recent analysis by Hatfield et al. (2014) indicates that this species has undergone significant declines throughout much of its range; it was listed as Critically Endangered on the IUCN Red List (Hatfield et al. 2015). Notably, this species' decline mirrors that of *B. occidentalis*, its only known host.

The decline of its documented host *B. occidentalis* (Cameron et al. 2011) is likely driving the decline of this species. Additional direct threats that may be impacting this species include pesticide use, habitat loss, pathogens from managed pollinators, competition with non-native bees, and climate change

(reviewed in Goulson 2010, Williams et al. 2009, Williams and Osborne 2009, Fürst et al. 2014, Cameron et al. 2011b, Hatfield et al. 2012).

As with *B. occidentalis*, insecticides and herbicides likely pose the most risk to this species, with neonicitinoid insecticides being of particular concern. Note that no neonicotinoids insecticides are currently in use or proposed for use at JHS.

Determination: The Suckley cuckoo bumble bee does not occur at the low elevation valley floor site at or adjacent to the project area, therefore the proposed project will have no impact on this species.

Cumulative Effects

The JHSN project area is an agricultural field and surrounding non-crop areas (administrative buildings, storage, access roads, etc.). The project activities are limited to the property site and are typical of agricultural production. The site does not contain any primary habitat types for federally listed species and only a few Forest Service sensitive species could visit the site, primarily for foraging. Potential for cumulative effects is limited to risks from pesticide exposure at the site during foraging, when added to presumed pesticide exposures on surrounding agricultural lands. Since Oregon does not maintain a public database of pesticide use reporting it is not possible to quantify the potential for cumulative exposures to the specific pesticides used at JHSN.

For the purpose of this analysis, it is assumed that purple martin, tricolored blackbird, Lewis' woodpecker, fringed myotis, Townsend's big-eared bat, pallid bat, coronis fritillary, and Oregon branded skipper could be exposed to different or the same pesticides in surrounding agricultural lands. However, actual risks from activities at JHSN are so limited in scope and scale (e.g. number of pesticides posing a risk, the degree of risks, the limited seasons of species presence, and the very small percentage of populations present in the area) as to be highly unlikely to add to effects from other activities to a meaningful degree. Therefore, the proposed project will not create substantial or significant cumulative effects.

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